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The Implementation Of Project-Based Learning And Its Impact On Student Achievement

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Abstract: *This study aims to explore the implementation of Project-Based Learning (PjBL) and its impact on student achievement at MA Darunnajah Trenggalek. In response to the growing need for more active and student-centered learning, PjBL is introduced as an alternative method that encourages students to engage in real-life problem solving and collaborative activities. The research uses a qualitative descriptive approach involving classroom observation, interviews with teachers and students, and analysis of learning documents and assessment records. The results show that PjBL significantly improves student engagement, motivation, and understanding of the subject matter. Students participating in project-based activities demonstrated better academic performance compared to their previous achievements using traditional instructional methods. Through tasks such as group presentations, research projects, and real-world applications, students developed essential skills including critical thinking, communication, and teamwork. Teachers reported a noticeable shift in classroom dynamics, where students became more proactive, enthusiastic, and responsible for their own learning. Despite some challenges such as time management and the need for careful planning, both teachers and students viewed the PjBL method positively. The findings suggest that implementing PjBL not only enhances students' cognitive achievement but also supports character development and active participation in the learning process. This study concludes that PjBL is an effective instructional strategy for improving academic outcomes and recommends its wider application in various educational settings, particularly in Islamic senior high schools that aim to integrate academic excellence with meaningful learning experiences.*
Keywords: *Project-Based Learning, Student Achievement, Active Learning, Instructional Strategy*.

INTRODUCTION

Education in the 21st century demands a fundamental shift from traditional pedagogical approaches to more dynamic, learner-centered methodologies. The conventional teacher-centered approach, often characterized by lectures, rote memorization, and passive reception of knowledge, has been found inadequate in equipping students with the competencies required for success in modern society (Bell, 2010; Thomas, 2000). Critical thinking, collaboration, creativity, and communication—often referred to as the "4Cs" of 21st-century skills—have become essential educational goals (Trilling & Fadel, 2009). Consequently, educators around the world have sought

alternative instructional strategies that align with these demands. One such approach gaining widespread recognition is Project-Based Learning (PjBL).

Project-Based Learning is an instructional method that involves students in real-world, meaningful projects where they actively explore and respond to complex questions or challenges (Krajcik & Blumenfeld, 2006). Unlike traditional learning that is often detached from real-life contexts, PjBL connects content with practical application, allowing students to construct knowledge through inquiry, collaboration, and reflection (Larmer, Mergendoller, & Boss, 2015). Research has shown that students engaged in project-based learning tend to retain content longer, develop deeper understanding, and perform better in assessments compared to those in traditional settings (Condliffe et al., 2017).

At MA Darunnajah Trenggalek, a private Islamic senior high school in East Java, Indonesia, there has been a growing awareness of the need to reform instructional practices to enhance student achievement. Based on academic performance data and teacher observations, many students demonstrate surface-level learning, low motivation, and limited engagement in conventional classroom settings. Recognizing these challenges, the school has begun experimenting with innovative strategies such as PjBL to foster deeper learning and improve academic outcomes.

The choice to implement Project-Based Learning at MA Darunnajah is also influenced by the compatibility of this approach with Islamic educational values. In Islam, learning is not only a means to gain knowledge but also a form of worship and a process of self-improvement (Al-Attas, 1980). PjBL aligns well with this vision by encouraging students to take ownership of their learning, solve problems collaboratively, and reflect on their actions—all of which support both cognitive and character development (Sahin, 2009). Furthermore, the emphasis on inquiry and critical thinking in PjBL resonates with the Islamic tradition of ijtihad (independent reasoning) in seeking knowledge and solutions.

Numerous studies have demonstrated the positive impact of PjBL on student performance. For instance, a study by Holm (2011) found that students who participated in project-based activities showed increased motivation and better comprehension across various subjects. Similarly, a meta-analysis by Han et al. (2015) confirmed that PjBL has a significant effect on students' academic achievement, especially in science and language learning. Other research

suggests that PjBL also supports the development of soft skills such as communication, leadership, and resilience (Mergendoller, Maxwell, & Bellisimo, 2006; Blumenfeld et al., 1991).

In the Indonesian context, PjBL has been successfully implemented in various educational settings. A study by Rahmawati and Kurniawati (2020) reported that the use of PjBL in Indonesian senior high schools led to improvements in students' cognitive skills and increased classroom engagement. Another study by Fitria and Oktaviani (2022) in a madrasah setting highlighted that PjBL encourages students to connect religious knowledge with real-life social issues, thereby deepening their understanding and application of Islamic teachings.

Despite its potential, implementing PjBL is not without challenges. Teachers often require adequate training and support to design meaningful projects and facilitate student learning effectively (Ravitz, 2010). Time constraints, assessment difficulties, and curriculum alignment are also common obstacles (Kokotsaki, Menzies, & Wiggins, 2016). However, these challenges can be addressed through professional development, collaboration among educators, and the use of technology to support project planning and monitoring.

This study seeks to contribute to the growing body of literature on Project-Based Learning by examining its implementation and impact at MA Darunnajah Trenggalek. The research is guided by the following question: How does the implementation of PjBL influence student academic achievement in the context of an Islamic senior high school? The study aims to explore both the cognitive outcomes and the practical experiences of students and teachers involved in PjBL. By doing so, it hopes to provide insights for educators and policymakers seeking to adopt more effective and contextually relevant teaching practices.

METHOD

This study employed a qualitative descriptive research design to explore the implementation of Project-Based Learning (PjBL) and its impact on student achievement at MA Darunnajah Trenggalek. The qualitative approach was chosen to gain an in-depth understanding of the teaching and learning process, student engagement, and perceived academic outcomes through direct observation and participant perspectives (Creswell & Poth, 2018).

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Data were collected using three primary techniques: classroom observation, interviews, and document analysis. Classroom observations were conducted over the course of one semester to examine how PjBL was integrated into instructional practices, with a focus on student participation, teacher facilitation, and classroom dynamics. Observations followed a structured checklist adapted from previous PjBL studies (Thomas, 2000) and were documented in detailed field notes. Semi-structured interviews were conducted with two subject teachers—one from Islamic Studies and one from English—and with 10 purposively selected students. The interviews aimed to capture participants' experiences, perceptions, and challenges during the implementation of PjBL. These interviews were audio-recorded and transcribed for analysis.

Document analysis was used to triangulate the data, involving the review of lesson plans, samples of student project work, and academic score records before and after the application of PjBL. This allowed the researchers to assess changes in students' academic performance and learning outcomes (Bowen, 2009). The study involved 30 students from a single class during the 2024/2025 academic year. The selected teachers had prior experience in using student-centered methodologies and received guidance in PjBL design prior to the study (Larmer et al., 2015). Data were analyzed thematically to identify recurring patterns and insights related to the effectiveness of PjBL in enhancing student achievement.

RESULT AND DISCUSSION

Increased Student Engagement and Participation

The implementation of Project-Based Learning (PjBL) at MA Darunnajah Trenggalek significantly transformed student engagement in the classroom. Traditionally, many learning activities in the school were dominated by lecture-based instruction, where students were passive recipients of information. This often led to a lack of enthusiasm, minimal interaction, and low levels of participation. However, with the shift toward PjBL, students were given the opportunity to be actively involved in their own learning processes. They were encouraged to identify real-world problems, design collaborative projects, and present their findings in creative ways. This student-centered model promoted a learning environment where students became contributors rather than mere listeners.

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Teachers reported that students displayed increased curiosity and initiative throughout the PjBL activities. Classroom dynamics became more interactive and student-driven, with learners frequently engaging in dialogue, asking questions, and sharing opinions. This development is in line with the findings of Blumenfeld et al. (1991), who noted that PjBL fosters intrinsic motivation by allowing students to pursue learning through meaningful activities. Holm (2011) also emphasized that when students are given the freedom to explore topics of interest through projects, their sense of responsibility and enthusiasm increases significantly.

Group collaboration emerged as a core component of student engagement in the PjBL setting. In most projects, students worked in teams to design solutions, conduct research, and construct presentations. These collaborative interactions not only improved academic outcomes but also cultivated interpersonal and social skills such as leadership, active listening, and conflict resolution (Thomas, 2000; Han et al., 2015). The structure of PjBL naturally creates opportunities for peer learning, where students are encouraged to help each other and reflect on their shared learning journey (Mergendoller et al., 2006). At MA Darunnajah, students often expressed that working together helped reduce anxiety and increased their confidence in completing tasks.

The authenticity of project tasks played a significant role in boosting student engagement. Projects at MA Darunnajah were designed to connect academic content with real-life contexts, such as developing small-scale business plans in Islamic economics or creating environmental awareness campaigns in English class. These projects gave students a sense of relevance and purpose, motivating them to invest effort and creativity in their work. According to Krajcik and Blumenfeld (2006), relevance is a key driver of engagement, as students are more likely to be invested in learning when they understand its application in everyday life.

Student engagement was also visible in the way learners managed their own time and responsibilities. Many students developed planning skills, created timelines for task completion, and divided roles among team members. Teachers noted that this independence marked a departure from the passive behaviors often seen in traditional classroom settings. The active learning promoted by PjBL aligns with Dewey's (1938) educational philosophy that learning is most effective when it involves experience, reflection, and social interaction.

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Technology integration further amplified student engagement during the PjBL process. Students utilized digital tools such as PowerPoint, Canva, and even simple video editing software to enhance the presentation of their projects. This use of technology not only helped students communicate their ideas more effectively but also introduced them to digital literacy skills essential in the 21st-century landscape (Bell, 2010; Trilling & Fadel, 2009). The incorporation of multimedia elements in their work sparked creativity and gave them a platform to express themselves beyond text-based learning.

Despite these achievements, the transition to PjBL also required adjustments on the part of students. Some initially struggled with the increased responsibility and open-ended nature of project tasks. However, with ongoing guidance and encouragement from teachers, most students adapted to the new learning culture. According to Kokotsaki et al. (2016), such transitional challenges are common in PjBL environments but tend to diminish as students become more familiar with collaborative inquiry-based practices.

The implementation of PjBL at MA Darunnajah Trenggalek significantly enhanced student engagement and participation. The method shifted the focus from teacher-centered delivery to active, student-led exploration. This approach fostered a more dynamic and interactive classroom culture, promoting motivation, collaboration, and ownership of learning. These findings suggest that with proper planning and support, PjBL can be a highly effective strategy to increase student involvement and academic performance.

Development of Research and Critical Thinking Skills

One of the most significant outcomes observed from the implementation of Project-Based Learning (PjBL) at MA Darunnajah Trenggalek was the marked improvement in students' research and critical thinking skills. These cognitive competencies are essential in modern education, particularly in an era where information is abundant but the ability to process, evaluate, and apply knowledge is what distinguishes high-performing learners (Brookhart, 2010). The structure of PjBL naturally fosters the development of these skills, as students are tasked with exploring complex questions, identifying sources of information, analyzing data, and presenting their findings.

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Through project-based assignments, students were consistently challenged to go beyond surface-level understanding. They were required to investigate real-life issues, such as environmental conservation, Islamic financial systems, or global health challenges, depending on the subject area. For instance, in Islamic Studies, students conducted a project on Islamic economic practices, where they not only reviewed classical texts but also simulated business models aligned with sharia principles. This approach pushed them to think critically about how theoretical knowledge could be applied in practical, modern contexts—an experience that deepened their comprehension and improved long-term retention of material (Bell, 2010; Thomas, 2000).

In English language classes, students created multimedia presentations on international issues such as climate change, poverty, or digital literacy. These assignments encouraged them to explore current global challenges from multiple perspectives, improve their vocabulary, and develop arguments supported by evidence. Students had to evaluate the credibility of sources, synthesize diverse viewpoints, and communicate their ideas coherently. According to Krajcik and Blumenfeld (2006), these kinds of tasks not only develop language and presentation skills but also foster metacognition and reflective thinking.

Moreover, the requirement to present findings in front of peers helped build student confidence and public speaking abilities. Presentations were not merely a formality but a critical component of the learning process, as students had to answer questions, defend their positions, and receive feedback. This iterative cycle of inquiry, reflection, and revision aligns with Bloom's revised taxonomy, where higher-order thinking—such as evaluating, analyzing, and creating—is prioritized over memorization (Anderson & Krathwohl, 2001).

The collaborative nature of project-based learning also contributed to the sharpening of cognitive skills. Working in teams, students had to divide responsibilities, challenge each other's ideas, and negotiate solutions. This peer interaction acted as a form of cognitive scaffolding, where students engaged in what Vygotsky (1978) termed the "zone of proximal development." In such environments, students can achieve more with the support of others than they could independently, thereby stretching their cognitive capabilities.

Another noteworthy observation from the MA Darunnajah setting was the diversity of formats in which students expressed their understanding. Some preferred oral presentations, others

produced visual posters, written reports, or digital slideshows. This variety allowed students with different learning styles to leverage their strengths while still engaging with the core academic content. According to Kolb (1984), experiential learning environments that provide multiple modes of expression enhance students' ability to internalize and apply knowledge effectively.

Teachers involved in the study also highlighted a shift in student questioning. As the semester progressed, students began to ask more analytical and evaluative questions rather than simply seeking correct answers. This suggests a move toward inquiry-based thinking, a core component of critical thinking that is emphasized in modern constructivist pedagogy (Jonassen, 1999). The PjBL environment, by its very nature, created a classroom culture where deep questioning and problem solving became integral to the learning process.

Despite the improvements, some students initially struggled with open-ended tasks, especially those unfamiliar with independent research. However, with adequate support—such as guiding questions, teacher scaffolding, and peer mentorship—students gradually developed the confidence and competence to navigate these challenges. As emphasized by Ravitz (2010), sustained engagement with authentic problems enhances students' ability to think critically over time, especially when paired with reflective feedback.

The implementation of PjBL at MA Darunnajah Trenggalek clearly facilitated the development of research and critical thinking skills. By placing students in the role of investigators, communicators, and problem solvers, this approach empowered them to engage deeply with academic content. The results reaffirm the value of PjBL as a transformative instructional strategy that not only enhances content mastery but also cultivates essential 21st-century cognitive abilities.

Improvement in Academic Performance

A notable result from the implementation of Project-Based Learning (PjBL) at MA Darunnajah Trenggalek was the measurable improvement in students' academic performance. Prior to the introduction of PjBL, student achievement across several subjects—including Islamic Studies, English, and Social Science—reflected modest comprehension levels, particularly when assessed through traditional written tests. After the introduction of PjBL, teachers reported an

increase in students' average scores on both formative and summative assessments. These improvements were observed consistently across multiple project cycles and subject areas.

The rise in academic performance can be attributed to the contextual and applied nature of the PjBL model. Rather than memorizing isolated facts, students were immersed in real-life problems that required deeper understanding and application of knowledge. As students worked through these projects, they developed stronger conceptual frameworks, which enabled them to retain information more effectively and apply it in new situations. According to Thomas (2000), PjBL enhances academic outcomes because it promotes active learning, sustained engagement, and interdisciplinary thinking.

In a project focused on Islamic banking and finance, students conducted simulated transactions based on sharia principles. Through this activity, they not only demonstrated mastery of the theoretical content but also developed problem-solving skills by applying those principles in complex scenarios. The hands-on nature of the learning process enabled students to move beyond rote memorization toward synthesis and evaluation—hallmarks of higher-order thinking as defined by Bloom's revised taxonomy (Anderson & Krathwohl, 2001).

In English subjects, students prepared presentations on global issues, composed argumentative essays, and engaged in peer review processes. Teachers noted a significant improvement in grammar, vocabulary use, structure, and coherence in student writing. This improvement coincided with a broader increase in participation and motivation. Research by Bell (2010) suggests that academic achievement in language arts is often enhanced when students engage in authentic tasks that require communication, reflection, and revision—all of which are integral to PjBL.

The assessment practices used during the implementation of PjBL also played a role in supporting academic success. Rather than relying solely on standardized tests, teachers employed rubrics, self-assessments, and peer evaluations to gauge student learning. These alternative forms of assessment provided more comprehensive feedback and encouraged students to take ownership of their academic progress. Black and Wiliam (1998) argue that formative assessment strategies, when embedded within instructional practices, lead to substantial gains in student achievement.

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PjBL promotes deep learning, a process where students not only acquire factual knowledge but also connect it meaningfully with prior understanding. Deep learning enhances comprehension and retention, enabling students to transfer knowledge across contexts (Biggs & Tang, 2011). In the MA Darunnajah setting, students engaged in cross-disciplinary projects that required them to integrate concepts from religious, scientific, and civic domains, reinforcing interconnected understanding and strengthening their cognitive abilities.

The positive correlation between PjBL and academic improvement is supported by numerous empirical studies. Han et al. (2015) conducted a meta-analysis showing that students in PjBL environments outperform their peers in traditional classrooms, particularly in STEM and language learning. Similarly, a study by Condliffe et al. (2017) found that PjBL is most effective when projects are aligned with curriculum standards and include structured opportunities for feedback and reflection.

Nevertheless, it is important to recognize that PjBL's success in improving academic performance depends on several contextual factors. At MA Darunnajah, teacher commitment, administrative support, and ongoing collaboration played critical roles in the successful integration of PjBL strategies. According to Ravitz (2010), schools that implement PjBL effectively tend to exhibit a strong culture of inquiry, shared vision, and professional development among educators.

The implementation of Project-Based Learning at MA Darunnajah Trenggalek led to meaningful improvements in student academic achievement. The increase in assessment scores and observable cognitive growth underscore the efficacy of PjBL as a pedagogical strategy. By engaging students in meaningful, contextual, and inquiry-driven learning experiences, PjBL not only enhances comprehension and retention but also prepares students for future academic and real-world challenges.

Challenges in Implementation and Recommendations

Although the application of Project-Based Learning (PjBL) at MA Darunnajah Trenggalek produced many positive educational outcomes, its implementation was not without challenges. One of the most frequently mentioned issues by teachers was the constraint of instructional time. Unlike traditional teaching methods that follow a linear schedule of content delivery and testing, PjBL requires extended timeframes for planning, project development, group discussions, student

exploration, and presentation. Teachers often found it difficult to align PjBL timelines with fixed academic calendars and examination schedules. This finding mirrors those in previous studies by Thomas (2000) and Holm (2011), who noted that managing time efficiently is a key obstacle when implementing inquiry-based approaches in secondary education.

Another significant challenge was the pedagogical shift in teacher roles. Teachers had to transition from being the central source of knowledge to becoming facilitators of learning. This role change required not only a change in mindset but also the mastery of new instructional strategies such as scaffolding, inquiry guidance, formative feedback, and group facilitation. For many teachers at MA Darunnajah, this shift was initially uncomfortable, especially for those with long-standing experience in traditional methods. According to Blumenfeld et al. (1991), the effectiveness of PjBL hinges largely on the teacher's ability to support student autonomy while maintaining academic rigor.

There was a widespread acknowledgment of the need for professional development. Teachers expressed a desire for structured training sessions focused on PjBL principles, project design, assessment rubrics, and the integration of cross-disciplinary content. Several educators admitted they were unfamiliar with how to effectively structure a project, how to manage group dynamics, or how to assess both individual and group contributions. As noted by Krajcik and Blumenfeld (2006), sustained professional learning is a cornerstone of successful PjBL implementation and must be integrated into institutional planning.

Collaborative planning also posed logistical difficulties. While teachers recognized the value of joint curriculum development, limited opportunities for collaborative preparation restricted the sharing of best practices. Without sufficient time for interdisciplinary planning and reflection, projects risked becoming fragmented and lacking in coherence. DuFour and Eaker (1998) suggest that schools should create formal structures, such as Professional Learning Communities (PLCs), to promote teacher collaboration and continuous improvement in project-based approaches.

Assessment emerged as another critical challenge. Traditional summative assessments such as multiple-choice tests were inadequate for measuring the depth and breadth of student learning in a PjBL setting. Teachers struggled to design performance-based assessments that were valid, reliable, and aligned with learning objectives. According to Wiggins and McTighe (2005),

assessment in PjBL must capture both the process and the final product of learning, which requires clear rubrics and consistent criteria—tools that are not yet common in many schools.

The availability of resources also influenced the ease of implementation. Some projects required access to internet-connected devices, research materials, or presentation tools, which were not uniformly available to all students. This disparity impacted the consistency of student performance and participation. As Thomas (2000) notes, PjBL can widen the achievement gap if schools do not ensure equitable access to instructional materials and technology.

Despite these challenges, most teachers agreed that PjBL led to a more dynamic, engaging, and student-centered classroom environment. The enthusiasm and autonomy displayed by students encouraged teachers to persist with the model. However, to sustain and scale this practice, institutional support is critical. School leaders must prioritize professional training, time allocation, and assessment reform to create a system conducive to PjBL (Ravitz, 2010; Kokotsaki et al., 2016).

In response to the obstacles identified, this study recommends several strategies. First, institutions should offer ongoing professional development focused on instructional design, interdisciplinary planning, and authentic assessment. Second, schools should allocate dedicated collaborative planning time within teacher schedules. Third, a hybrid model of PjBL and traditional instruction could be explored to balance content coverage with skill development. Lastly, investment in technological infrastructure and equitable resource distribution is essential for inclusive PjBL practices. While the path to implementing Project-Based Learning is filled with logistical and pedagogical challenges, these can be mitigated through systematic planning, professional growth, and collaborative school culture. With the right support, PjBL holds strong potential as a transformative strategy for 21st-century education.

CONCLUSION

The implementation of Project-Based Learning (PjBL) at MA Darunnajah Trenggalek has yielded significant improvements in the quality of student learning and academic achievement. Through this study, it was evident that shifting from traditional teacher-centered instruction to a student-centered, inquiry-based model promoted deeper engagement, enhanced motivation, and fostered critical thinking skills. PjBL allowed students to become active participants in their own

learning, encouraging autonomy, collaboration, and the ability to apply knowledge in real-world contexts. The findings demonstrated that students involved in PjBL scored higher in post-project assessments compared to previous conventional tests. Additionally, students showcased increased enthusiasm, improved research abilities, and greater confidence in presenting ideas. These academic and cognitive gains indicate that PjBL can serve as an effective strategy for not only enhancing subject mastery but also cultivating 21st-century competencies such as problem-solving, communication, and creativity.

Despite some implementation challenges—such as time constraints, the need for professional development, and the demand for careful instructional planning—teachers affirmed the overall benefits of PjBL. The classroom atmosphere became more dynamic and collaborative, contributing to a more meaningful and lasting learning experience for students. Given these outcomes, the study supports the integration of Project-Based Learning into broader school curricula. It is recommended that schools invest in teacher training, flexible scheduling, and supportive assessment systems to ensure sustainability. Furthermore, future research should explore the long-term impacts of PjBL across different subjects, student demographics, and educational levels. With continued refinement and institutional support, PjBL has the potential to transform traditional classrooms into vibrant centers of student-centered learning.

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